

FIG. 1A
(PRIOR ART)

FIG. 1B
(PRIOR ART)

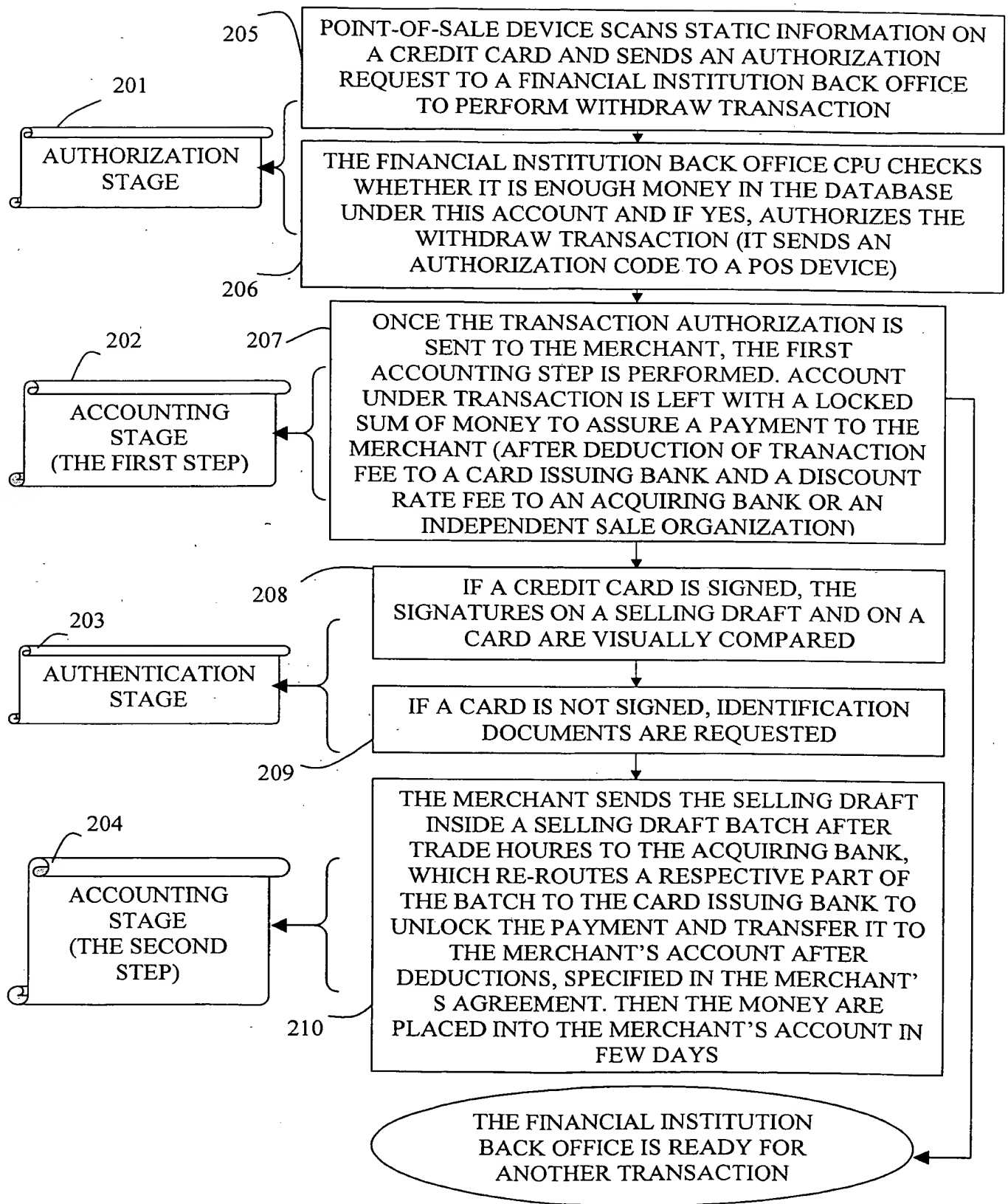


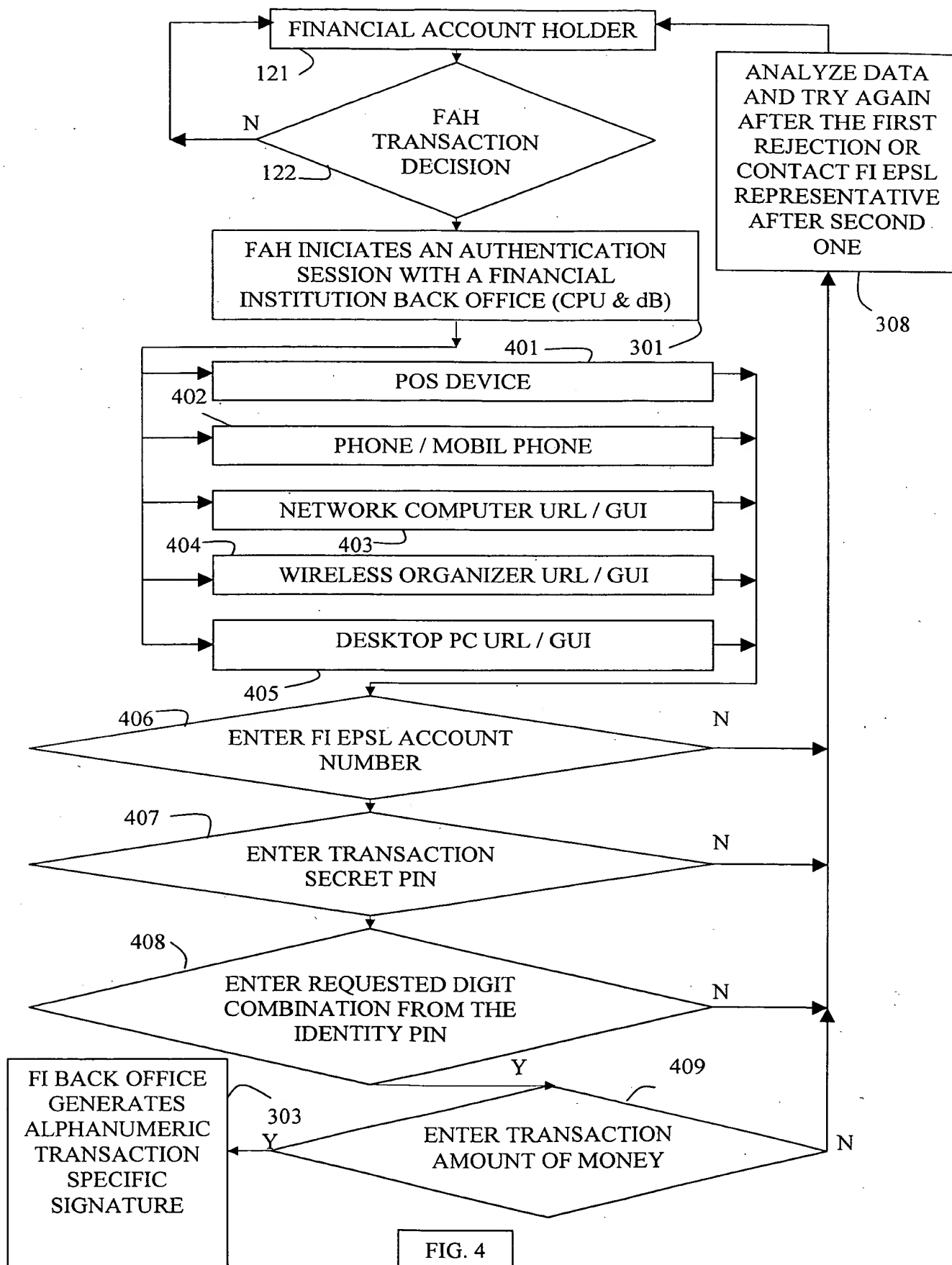
FIG. 2
(PRIOR ART)

```

graph TD
    121[FINANCIAL ACCOUNT HOLDER FAH] --> 122{FAH TRANSACTION DECISION}
    122 -- N --> 121
    122 -- Y --> 301[FAH INITIATES AN AUTHENTICATION SESSION WITH A FINANCIAL INSTITUTION FI BACK OFFICE]
    301 --> 302{FI MAKING AUTHENTICATION DECISION}
    302 -- N --> 308[ANALYZE DATA AND TRY AGAIN AFTER THE FIRST REJECTION OR CONTACT FI EPSL REPRESENTATIVE AFTER SECOND ONE]
    302 -- Y --> 303[GENERATING ALPHANUMERIC FINANCIAL TRANSACTION FT SIGNATURE]
    303 --> 304{FAH SUBMITTING T-SIGNATURE TO THE FT COUNTERPART}
    304 -- N --> 121
    304 -- Y --> 305[MERCHANT OR BANK TELLER INITIATES AN AUTHORIZATION SESSION WITH A FINANCIAL INSTITUTION BACK OFFICE CPU & dB]
    305 --> 306{FI BACK OFFICE AUTHORIZATION DECISION}
    306 -- N --> 308
    306 -- Y --> 307[FI BACK OFFICE COMPLETES AN ACCOUNTING SESSION ONCE THE TRANSACTION IS AUTHORIZED]
    307 --> 309([THE TRANSACTION IS COMPLETED])
    308 --> 121

```

FIG. 3



```

graph TD
    301[FAH INITIATES AN AUTHENTICATION  
SESSION WITH A FINANCIAL INSTITUTION  
BACK OFFICE (FIBO) (CPU & dB)] --> 401
    401[401  
POS DEVICE] --> 402
    402[402  
PHONE / MOBIL PHONE] --> 403
    403[403  
NETWORK COMPUTER URL / GUI] --> 404
    404[404  
WIRELESS ORGANIZER URL / GUI] --> 405
    405[405  
DESKTOP PC URL / GUI] --> 504
    504{ACCOUNT NUMBER  
REOUEST} -- Y --> 502
    502[502  
ACCOUNT NUMBER SEARCH  
PROGRAM AT FIBO CPU/dB  
VERIFIES IT AT FIBO dB] --> 506
    506{TRANSACTION PIN  
REOUEST} -- Y --> 503
    503[503  
TRANSACTION PIN VERIFICATION  
PROGRAM AT FIBO CPU VERIFIES IT  
AT FIBO dB] --> 508
    508{IDENTITY PIN  
SUBSET REOUEST} -- Y --> 505
    505[505  
IDENTITY PIN RANDOM SUBSET  
GENERATOR AT FIBO CPU  
VALIDATES IT AT FIBO dB] --> 509
    509{REQUESTED FT  
AMOUNT} -- Y --> 507
    507[507  
ACCOUNT CONSISTANCY PROGRAM  
AT FI CPU CHECKS WHETHER  
TRANSACTION IS POSSIBLE AT FI dB] --> 510
    510{FIBO CPU  
GENERATES  
ALPHANUMERIC  
TRANSACTION} -- Y --> 511
    511[511  
FIBO (CPU & dB) AUTHENTICATION  
SESSION IS COMPLETED AND  
ACCOUNTING SESSION IS BEGUN;  
THE AUTHENTICATION FILE IS  
GENERATED, TIME STAMPED AND  
PUT ON HOLD AT FIBO dB;  
CONCURRENTLY THE  
ALPHANUMERIC TRANSACTION  
SPECIFIC SIGNATURE IS SENT TO FAH] --> 501
    501[501  
INTERRUPT  
AUTHENTICATION  
SESSION;  
TRANSACTION  
DENIED] --> 301

```

FIG. 5

MERCHANT / SELLER OR FI BANK TELLER	FI EPSL FINANCIAL ACCOUNT HOLDER	FI BACK OFFICE CPU	FI BACK OFFICE dB
	← → ACC# {XYZ}		← 601 \
	→ W PIN		← 602 \
	→ D PIN		← 603 \
	→ W\$		← 604 \
	→ D\$		← 605 \
	→ ID PIN		← 606 \
	← →	← (W/D)#_GEN(ACC#{XYZ}, (W/D)_PIN, ID_PIN, (W/D)\$, TX1) →	← 607 \
		T_INT((W/D)#_GEN(ACC#{XYZ}, (W/D)_PIN, ID_PIN, (W/D)\$, TX1))	← 608 \
		ACC#{XYZ}_TX1	← 609 \
		ACC#{XYZ}_TX2	← 610 \
BUS#	→		← 611 \
T-AMOUNT	→		← 612 \

FIG. 6

MERCHANT (OR A BANK TELLER) INITIATES AN AUTHORIZATION SESSION WITH A FINANCIAL INSTITUTION BACK OFFICE (FIBO) (CPU & dB)

INTERRUPT
AUTHORIZATION
SESSION;
TRANSACTION
DENIED

POS DEVICE

PHONE / MOBIL PHONE

[illegible]

WIRELESS ORGANIZER URL / GUI

DESKTOP PC URL / GUI	
1	1
2	2
3	3
4	4
5	5
6	6
7	7
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14	14
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92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

ACCOUNT NUMBER SEARCH
PROGRAM AT FIBO CPU/dB
VERIFIES IT AT FIBO dB

```

graph LR
    Y((Y)) --> N((N))
    subgraph 704 [704]
        direction TB
        A[FIBO REQUESTS]
        B[ACCOUNT NUMBER]
    end
    Y --> A
    A --> B
    B --> N

```

TRANSACTION SIGNATURE
VERIFICATION PROGRAM AT FIBO
CPU VALIDATES IT AT FIBO dB

```

graph LR
    703{703 T-SIGNATURE REQUEST} --> N[N 706]
  
```

**BUSINESS ID VERIFICATION
PROGRAM AT FIBO CPU STORES IT
AT FIBO dB**

```

graph TD
    A[START] --> B[GET FIBO REQUESTED BUSINESS ID #]
    B --> C{FIBO REQUESTED BUSINESS ID #}
    C -- Y --> D[GET FIBO REQUESTED BUSINESS ID #]
    C -- N --> E[END]

```

ACCOUNT VERIFICATION
PROGRAM AT FIBO CPU CHECKS
WHETHER TRANSACTION IS
POSSIBLE AT FIBO dB

```

graph LR
    Y((Y)) --> N((N))
    subgraph Diamond
        Text[MERCHANT (TELLER) T-AMOUNT ENTERED]
    end
    N --> Exit(( ))
    style Exit fill:none,stroke:none
  
```

**FI BACK OFFICE COMPLETES
AN ACCOUNTING SESSION ONCE
THE TRANSACTION IS AUTHORIZED**

```

graph LR
    Y((Y)) --> D{FIBO AUTHORIZES  
TRANSACTION}
    D --> N((N))
    D --> S((S))
    S --> D
    S --> S2((S))
    S2 --> S3((S))
    S3 --> S4((S))
    S4 --> S5((S))
    S5 --> S6((S))
    S6 --> S7((S))
    S7 --> S8((S))
    S8 --> S9((S))
    S9 --> S10((S))
    S10 --> S11((S))
    S11 --> S12((S))
    S12 --> S13((S))
    S13 --> S14((S))
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    S246 --> S247((S))
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    S248 --> S249((S))
    S249 --> S250((S))
    S250 --> S251((S))
    S
```

FIG. 7

EPSL PROTOCOL ITEMS DELIVERED TO FI BACK OFFICE (CPU & dB)	AUTHEN- TICATION SESSION	AUTHO- RIZATION SESSION	ACCOUN- TING SESSION
ACC#{XYZ}	+	+	-
(W / D)_PIN	+	-	-
ID_PIN SUBSET	+	-	-
(W / D)\$	+	-	-
(W/D)#_GEN(ACC#{XYZ}, TX1)	+	+	+
T_INT(ACC#{XYZ}, TX1)	+	-	-
ACC#{XYZ}_TX1	+	+	+
ACC#{XYZ}_TX2	-	+	+
BUS#	-	+	+
T-AMOUNT	-	+	+

FIG. 8

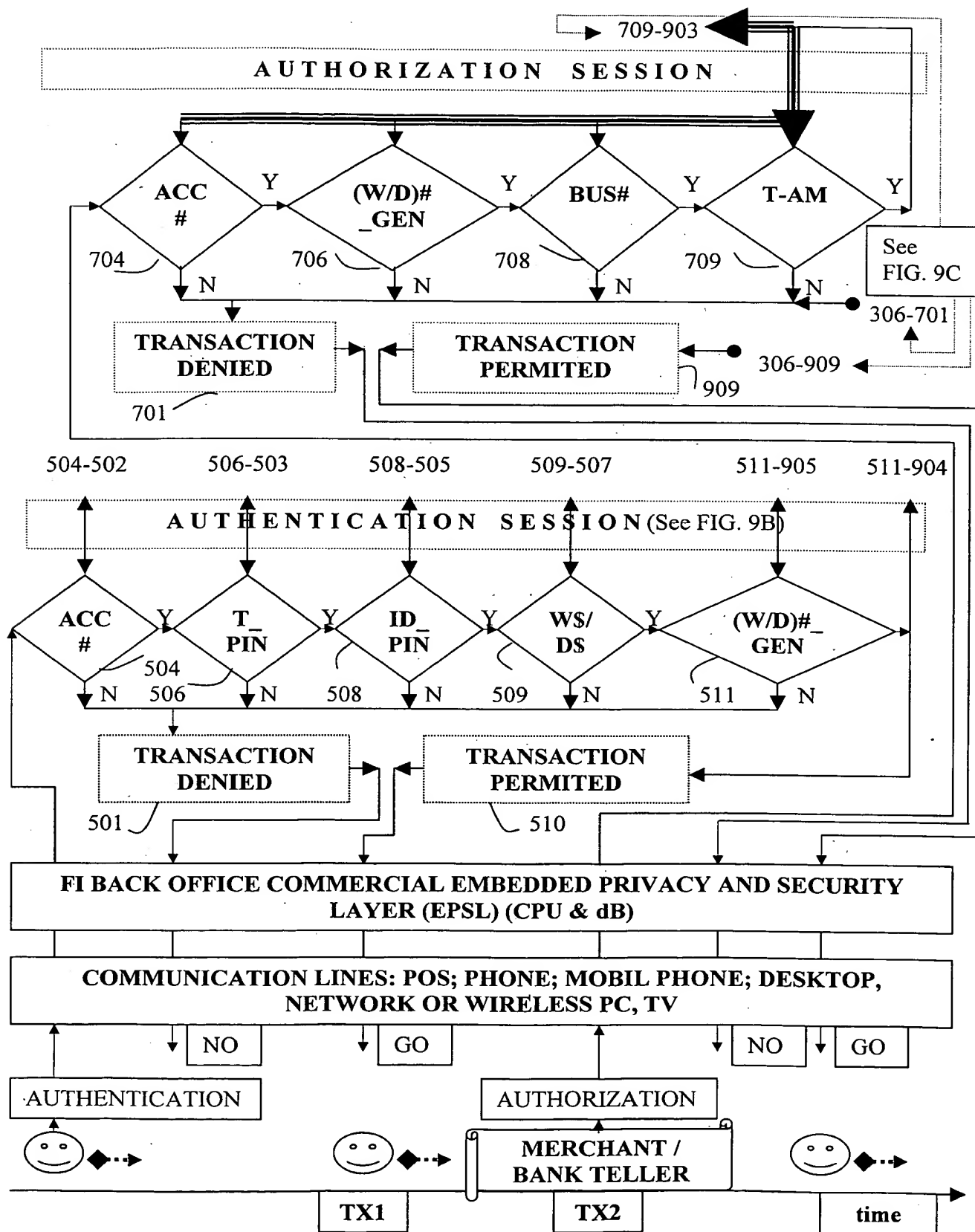


FIG. 9A

The diagram illustrates the architecture of the FI Back Office Commercial Embedded Privacy and Security Layer (EPSL) (CPU & dB). The system is organized into several functional blocks and data paths:

- FI BACK OFFICE GLOBAL CLOCK (902)** and **FI BACK OFFICE WATCHDOG (901)** are at the top left, connected to a clock signal line.
- TX1** and **TX2** are transaction lines at the top, with TX2 connected to a block containing **709-903** and **901-703**.
- AUTHENTICATION FILE GENERATOR (904)** and **TRANSACTION SIGNATURE GENERATOR (905)** are in the middle left.
- FI BACK OFFICE ACCOUNT CONSISTANCY PROGRAM (507)** is below the signature generator.
- IDENTITY PIN RANDOM SUBSET GENERATOR (503)** is below the consistency program.
- TRANSACTION PIN VERIFICATION (505)** is below the identity pin generator.
- ACCOUNT NUMBER SEARCH PROGRAM (502)** is at the bottom left.
- UNIX / WINDOWS NT FILE** (907) is a central data storage area containing:
 - CREATED @TX1
 - ACC#{XYZ}_TX1
 - ~~~~~
 - ACC#, T_PIN,
 - ID_PIN, (W/D)\$,
 - (W/D)#_GEN
- See FIG. 9C** is a reference box near the center.
- 511-904**, **511-905**, **509-507**, **508-505**, **506-503**, and **504-502** are a series of data paths or buffers on the right, grouped by a bracket and labeled **See FIG. 9A**.
- FI BACK OFFICE COMMERCIAL EMBEDDED PRIVACY AND SECURITY LAYER (EPSL) (CPU & dB)** is the bottom-most layer, receiving input from the search program and other components.

Arrows indicate the flow of data and control signals between these components, showing a complex interconnection for transaction processing and security.

FIG. 9B

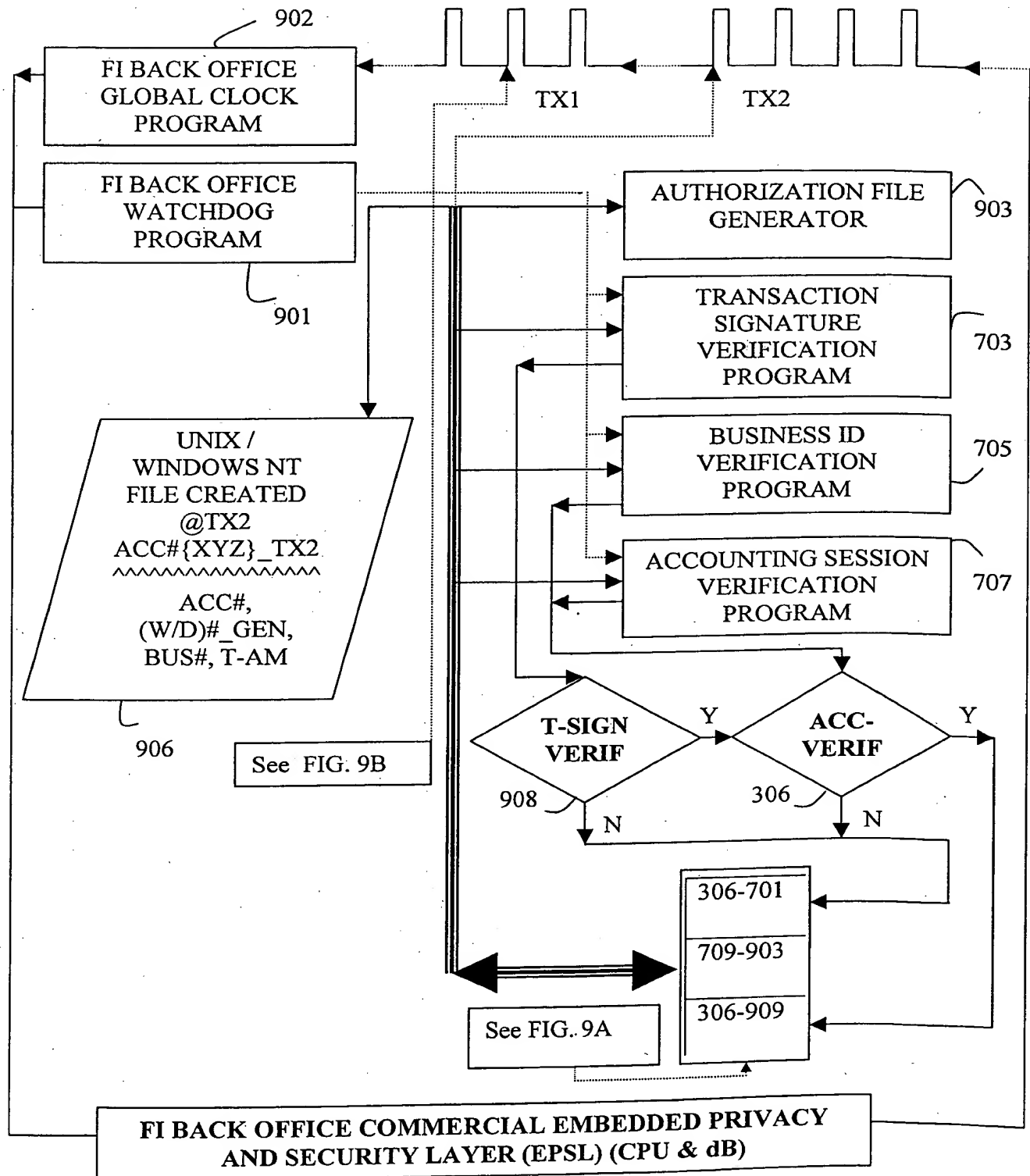


FIG. 9C